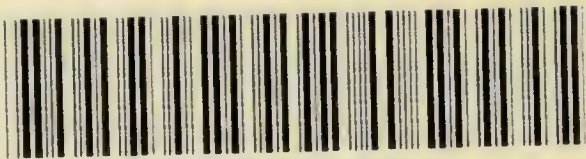


THE TREATMENT
OF
SYPHILIS OF THE NERVOUS SYSTEM

JULIUS ALTHAUS, M.D.

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OF
SYPHILIS OF THE NERVOUS SYSTEM.

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BY

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THE TREATMENT
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MR. PRESIDENT AND GENTLEMEN,

The treatment of nerve-syphilis should be first prophylactic, and second curative.

I.—PROPHYLACTIC TREATMENT.

The somewhat stale, but nevertheless highly important, principle that "prevention is better than cure," could hardly be more strikingly or efficiently illustrated than by the subject to which I now venture to ask your attention. Nerve-syphilis is under any circumstances one of the gravest diseases with which we have to contend in practice. It is, when left to itself, almost invariably fatal, having no tendency to spontaneous improvement or cure, but, on the contrary, a strong drift towards deterioration and death. Even if judiciously and energetically treated, it has generally proved more fatal than either

typhoid fever or pneumonia; and although the patient's life may be spared, he may yet be left permanently disabled, so as to be a burden to himself and his friends; while it happens only too frequently that when we have succeeded in removing the symptoms, and apparently restoring the patient's health, we are confronted with a sudden and severe relapse, perhaps at a time when we least expected it. From whatever point of view therefore we may look upon the malady, it becomes clear that we have to deal with a formidable and determined enemy, and that we should do everything in our power, not only to repel but to prevent his invasion.

The prophylactic treatment of nerve-syphilis resolves itself into two distinct lines of action. The first and most important of these should be, to destroy the virus in the beginning of the disease; while the second is, to strengthen the nervous system of the patient who has had syphilis, by every means in our power, so as to impart to it the highest possible degree of efficiency and resistance to the invasion of the complaint.

1st. *For destroying the virus in the beginning,* I would recommend the excision of the primary sore wherever this is practicable. Although there is still much discrepancy of opinion on this point, yet the balance seems during recent years to in-

cline strongly in favour of excision—a proceeding which appears indicated, not only *primâ facie* by a common-sense view of the question, but is also supported by a not inconsiderable body of direct practical evidence, which I trust may soon be much increased.

There will, however, always be a number of cases in which excision cannot be practised, on account of the situation of the sore; nor would I recommend the surgeon to trust in any case to excision alone. We cannot excise lymphatic glands which may be already affected when the patient comes under treatment, and some of which may be in inaccessible positions, as for instance in the iliac fossa. Probably all that can be claimed for excision of the primary sore is, not that it will absolutely prevent blood-poisoning, but that it will greatly attenuate it. I would therefore under any circumstances add further specific treatment, even in cases where excision has been successfully practised, should only the slightest secondary symptoms make their appearance.

That mercury possesses positive germicide virtues in the earlier stages of syphilis, when we have simply to do with blood-poisoning, and when the disease has not yet encroached on the substance of important organs—in other words, when it is only a blood-disease, and has not yet

become a flesh-and-blood-disease—appears to me as well established as any other fact in therapeutics. Let me on this point quote the experience of a contemporaneous surgeon who has devoted a whole lifetime to the observation and treatment of these earlier stages of the disease, and who has had ample opportunities of following up the subsequent history of patients who have had syphilis in their earlier years. I allude to Mr. Henry Lee, whose special experience on this point is probably unrivalled, and who has recently stated that, when the patient has been in the first instance under a mild and sustained course of mercury of from eight to twelve weeks' duration, he cannot recall a single instance where the bones or the nervous system have been subsequently affected. In order that this action may not be interfered with, he considers it essential that the patient should not be exposed to cold air or cold water, and recommends that small doses of iodide of potassium should be given to assist the action of the mercury. He does not believe that the necessary action can be maintained by mercury given internally; for if thus continued for a sufficient time and in sufficient doses, the drug is sure to disorder the bowels, and it will then have to be discontinued. When, however, the action of mercury in the

system has subsided, it is difficult to renew it, for the system has in some sense become proof against it, and there is no way of properly completing the course. Mr. Lee prefers the calomel vapour bath to all other modes of administering mercury, as he finds that its action on the skin tends to develop the disease there; it prevents salivation; it leaves the bowels unaffected, and may be continued any necessary length of time. If by being cured is meant that patients after proper treatment remain in future free from symptoms, do not infect their wives, have healthy families, and live as long as others, then he firmly maintains that syphilis is as curable as any other disease.

Mutatis mutandis, the same or nearly the same opinion has been expressed by other highly experienced surgeons. I will here only quote Fournier, who says that syphilis which has been in the beginning well treated with mercury, is *peu de chose*. The patient may have roseola and papules, mucous tubercles in the mouth and elsewhere, enlarged glands, some baldness, headache and pain in the limbs; but he is not liable to any grave lesions. This view of the matter agrees so thoroughly with my own experience, that I think we may take it for granted that mercury, efficiently given in the earlier stages

of syphilis, acts as a true germicide, leaving the patient's constitution uninjured to such an extent as if he had never had the disease.

Very different, unfortunately, is the aspect of things in cases where either no mercury has been given, or where this treatment has been prematurely broken off, or been accidentally interfered with. In such cases it is indeed not absolutely certain that the patient will eventually develop specific nerve-disease, which may ruin his health, cloud his intellect, and finally destroy life; but there is at least the possibility, and in some instances a strong probability, of such an occurrence actually taking place.

I will here advert to the nearly unanimous opinion of those who have seen most of nerve-syphilis, and which is to the effect that this is particularly apt to follow in cases where the symptoms have been unusually mild. Then the patient undergoes treatment for perhaps a few weeks only, after which all signs of the disease which have attracted his attention may have completely vanished. He believes himself cured, discontinues treatment prematurely, and thus lays the foundation for subsequent attacks of epilepsy, hemiplegia, and general paralysis. His constitution remains tainted with a subtle poison, of the presence of which in the system there may be

no immediate evidence; and although perhaps nothing terrible may happen to him if the lines of his life are laid in peculiarly smooth places, and if he should be free from a neurotic predisposition, yet the system's powers of resistance to unusual occurrences and accidents of life are greatly diminished, and a catastrophe is more easily induced in such persons than in others. Anxiety, grief, and excitement; fatigues and privations; exposure to wet and cold; injuries to the head and other accidents, are more prone to beget serious consequences in such men than in those who have not had syphilis; while any departure from the ordinary rules of hygiene, more especially excesses in alcohol and sexual indulgence, and last, not least, hard intellectual work, may act as exciting causes of the outbreak of one or another of the various forms of nerve-syphilis

Such being the case in persons who have no neurotic antecedents, either in their own life or that of their ancestors, matters become much more serious where there is such a tendency, as shown by the previous occurrence of nervous disorders in some of them. Where there has been epilepsy, paralysis, insanity, St. Vitus's dance, megrim, neurasthenia, or simply undue excitability of the nervous system, the liability of the latter to suffer from the additional taint of syphilis is largely

increased. Out of 281 cases in which I have made notes on this point, I find that a neurotic tendency had existed previous to infection in 167, that is, in 59·9 per cent., a very considerable proportion, but which is probably still actually below the mark, since more especially hospital patients are often quite unable to give any reliable information on such matters.

2nd. This leads me to the second point in the prophylactic treatment of nerve-syphilis—viz., that it is our duty by every means in our power *to brace up the nervous system of patients* who have had syphilis, so as to enable them as much as possible to resist any inroads of the disease on that vulnerable organ. From this point of view a tonic plan of treatment, in the widest sense of the term, is indicated after the mercurial course is finished, more especially in those in whom the earliest phases of the disease may have been neglected. The patient should, if possible, take a month's or six weeks' holiday, preferably a sea-voyage; live as much as possible in the open air; have a course of medicinal treatment, into which phosphorus, quinine, and arsenic enter; while the state of the secretions should be carefully attended to with such means as Carlsbad salts and podophyllin, and the skin stimulated by hot sponging in cold weather, and cold sponging in

hot weather, with a certain proportion of liquor ammoniæ added to the water. He should live plainly and according to rule, avoid excitement and hard work for a considerable time to come, and steer clear of sexual and alcoholic debauches. If such rules as these are strictly followed for some years, the chances of an outbreak of nerve-syphilis are considerably lessened, even in those who are constitutionally predisposed to nervous disorders.

I now proceed to the second portion of my discourse, and shall consider, first, the curative treatment of specific primary lesions, and, second, that of ordinary secondary changes being consecutive to the primary lesions.

II.—CURATIVE TREATMENT OF NERVE-SYPHILIS.

Ist. *The treatment of specific primary lesions.*—What are we to do when syphilis of the brain or other portions of the nervous system, whether as gumma, or as specific alteration of the coats of the arteries, or in any other form, has made its appearance?

Our mode of action must be determined by the fact that these lesions are, in the first instance, strictly specific; but that they will sooner or later,

unless checked by treatment, lead to secondary ordinary lesions, either by simple pressure or by directly cutting off the blood-supply to the substance of the surrounding parts. The period at which these secondary changes occur can, in many instances, be determined with a great amount of accuracy from the clinical symptoms which may be present, more especially if we have to deal with cases of gummatous basal meningitis, and subsequent disease of the arteries at the base of the brain, and softening of the corresponding cerebral areas. In other cases there may be great difficulty, or even impossibility, of ascertaining this point. It is, however, certain that mixed lesions, which are partly specific and partly ordinary, occur very frequently, which is shown, not only by post-mortem examinations, but also by the fact, which is of common notoriety, that patients improve up to a certain point by specific treatment, but then cease to mend, showing that, while the specific lesion has been benefited, the ordinary one has remained uninfluenced by our therapeutical procedures.

The more I see of nerve-syphilis, the more firmly am I convinced that mercury, if properly administered, acts as a true specific in all primary nerve-lesions, just as it does in the earlier manifestations of the secondary period; and that it is as

such infinitely superior to any other drug or mode of treatment with which I am acquainted. Truly specific lesions are found to yield to this remedy, even if they be of the most severe character, and in a number of cases just as well at an advanced period as in the beginning of the complaint; and as they may remain uncomplicated with ordinary lesions, even after having existed for a considerable time, there is a possibility of their being completely dispersed, and the patient's health being entirely restored. So much is this the case that we need in some instances not despair of a man's recovery before he is dead, remembering Ricord's epigrammatic saying that, "in the cure of syphilis, everything is possible, even the impossible." Indeed, most observers, who have seen much of this disease, have met with cases where the patient has, as it were, been snatched from the very jaws of death, and where he could not have recovered if his condition had been owing to any other cause than syphilis. A cure is sometimes effected, even after the patient has been ill for many years. I have lately succeeded in completely restoring a patient's health, chiefly by hypodermic injections of mercury, who had suffered for fourteen years from various symptoms of nerve-syphilis when he came under my care, viz., intense headache, epileptiform seizures, paresis of the left leg, vertigo, tinnitus

aurium, and obstinate insomnia, to which were added specific ulceration of the tongue and of the external meatus of the left ear. The patient had previously been treated with large doses of iodide of potassium, which may have prevented him from getting worse, but did not succeed in dispersing the specific lesions from which he suffered, every one of which, however, eventually yielded to mercurial treatment.

Tendency to get worse, and great liability to relapses after temporary improvement or an apparent cure, are amongst the principal features of nerve-syphilis. A patient who has shown undoubted signs of it, and who is not treated, is as good as certain to die of it, sooner or later, with symptoms of general paralysis of the insane; while with regard to relapses we all know how trying and oftentimes apparently inexplicable they are, coming on either as soon as treatment is discontinued, or a few months or years after an apparent cure, being generally more severe than the initial symptoms, and less liable to be favourably influenced by treatment. Our object in the therapeutics of this malady should therefore be not only to relieve the patient of his present symptoms, but also to guard him against future attacks of the distemper. In order to effect this, however, a much longer treatment is required

than has been found sufficient for the earlier period of syphilis. We cannot expect a patient with specific brain-disease to get well by giving him iodide of potassium for six weeks, or by sending him for a month to Aix-la-Chapelle for inunction and sulphur-baths. It would be difficult to lay down any general rule as to the length of time which may be required for stamping out the distemper for good; all I can say is, that the treatment must be protracted and systematic, and should be continued, not only until the symptoms which may be present have completely disappeared, where this is possible, but for some time afterwards, the length of which must be determined by individual circumstances, and be left to the discretion of the physician.

The plan of intermittent treatment has for a number of years past been greatly in favour with the profession. Fournier more especially has stated that mercury is apt to lose its effect when administered for a certain length of time. In his opinion the system gets accustomed to it after two or three months' use; and eventually no further good is done, as the remedy appears to become inert. He therefore advises energetic mercurialisation, together with treatment by iodide of potassium, for from six to eight weeks; then to have a break during which nothing is done, then to resume inunction for three

weeks without iodide, after which iodide is given without mercury, and so to ring the changes between the two remedies until the patient is better. This system, which has been modified from time to time, has unquestionably yielded better results than the very short courses of treatment which were formerly in vogue, and which are unfortunately even at the present day frequently considered sufficient.

I am bound to say that I strongly dissent from the view that mercury becomes inert after a time in these cases; for experience has taught me that in many instances just the reverse happens, and that, so far from the metal losing its effect after some months' use, it is, on the contrary, apt to gain in power, when the system is constantly but slightly kept under its influence for many months consecutively. I have, more especially in recent years, carried out systematic mercurial treatment in severe cases of nerve-syphilis for two years and upwards, with only occasional interruptions; with the result that not only have the patients submitted to it not suffered the slightest injurious effects from the prolonged use of this powerful medicine, but that a considerable proportion of them, whose prospects appeared *primâ facie* far from promising, have thoroughly recovered their health under the influence of it. Where sufficient

time has been given to this treatment, I have not met with any relapses. Indeed, since adopting the plan which I shall presently describe, my results have been infinitely better than they were formerly with the intermittent plan of treatment; and I now commence the treatment, even of severe cases of nerve-syphilis, with far greater confidence in my power over the disease than I was able to feel formerly. Although it stands to reason that serious consecutive ordinary lesions cannot be favourably influenced by this treatment, yet the effects of it upon the specific lesions themselves, more especially where these happen to be of a progressive character, put the patient in almost any case into a better position than he was in before, and often completely arrest his downward progress, which if unchecked, must have led to a speedily fatal issue.

The sudden introduction of large quantities of mercury has unquestionably proved useful in a number of cases, where, on account of the urgency of the symptoms, it appeared necessary to strike hard. Yet I have sometimes seen such mischief arising from this practice, that I much rather trust to the influence of small doses of the metal, combined with large doses of iodide of potassium given for a short time until the imminent peril is past, than run the risk of upsetting the patient's

health by saturating the system quickly with the metal.

Stomatitis and dysentery are the two rocks ahead which we must above all things steer clear of in our management of these cases. While in the earlier period of the disease, mercury appears to answer best if the gums be kept slightly sore for some months in succession, it has appeared to me in the later stages, where the nervous system claims our chief attention, preferable to avoid this altogether, more especially because if it has once set in then it is apt to become unmanageable. I remember several cases in the earlier years of my practice where the occurrence of stomatitis, caused by pushing the metal too vigorously, appeared to deprive the patients of that benefit which they might have gained from a more cautious and milder system of procedure.

Stomatitis and dysentery are not much to be feared when the perchloride is given, but are more liable to come on with the green iodide, with inunction, and in a more particularly severe form after the hypodermic injection of large doses of calomel and other insoluble preparations of mercury, such as Lang's grey oil, etc.

A number of fatal cases of this kind have lately been described by Runeberg, Kaposi, Lesser, Kraus, Smirnoff, and others. In such cases there is the

disadvantage of our being unable to stop the supply of the mercury, which is constantly being introduced into the blood from the place where the injection has been made, and the metal deposited, so that the exciting cause of the mischief continues to act at a time when everything seems to depend upon the possibility of our being able to arrest its influence. Anyone, therefore, who injects such doses as $1\frac{1}{2}$ or 3 grains of calomel at a time, and that every four or five days, does so at his peril. Shivering fits and inflammation of the air-passages have also been observed after such injections.

How should mercury then be administered in nerve-syphilis, when a protracted course of the metal is required?

The internal use of the drug encounters under these circumstances the same objections which may be made to it when used in the earlier stages of the distemper. It disorders digestion and causes diarrhœa; and has on this account to be discontinued, often before any remote effects may have become perceptible. The same remark applies to its introduction by the rectum, by means of suppositories. We may introduce the metal by washing the skin with mercurial soap, as recommended by Oberländer and Schuster; or by applying mercurial plasters and belts—an old method which has recently been revived by Quinquaud,

who recommends a calomel plaster about three inches square to be applied to the region of the spleen for a week at a time, then to be left off for a week, to be resumed in the third week, and so on. Then we have Mr. Henry Lee's calomel vapour-bath, which is of such great advantage in secondary syphilis; and, above all, inunction, which has long been considered the most energetic mode of treatment, but which has a certain number of drawbacks that tell strongly against its habitual use. It is in the first instance a very dirty proceeding, and one most repugnant to the feelings of the patient; it is apt to be ineffectual where the patient attends to it himself, and requires the assistance of a practised rubber; and it often leads very speedily to severe stomatitis and diarrhœa, probably owing to the inhalation of mercurial vapour, which is set free by friction, aided by the extraordinary faculty which mercury has of evaporating and diffusing itself into the atmosphere at all temperatures, but more especially in hot rooms or during hot weather. In hospitals, and even in private rooms, those who attend upon or habitually live with patients subject to inunction, are for this reason exposed to receive the mercury into their blood by inhalation; and the urine of such persons has been found to contain quite as much mercury as that of the patients

themselves. Finally, relapses are very common after this mode of treatment, more especially when it has been practised for a short time only.

These and other drawbacks have induced therapeutists for a number of years past to substitute the hypodermic injection of different preparations of mercury for the earlier methods of using the metal. The advantages claimed for injections are, that they are cleaner than inunction; that the dose given can be more exactly measured; that they are more effective, one injection doing as much good as ten or twelve inunctions; that the attendants remain free from the influence of the drug; and, finally, that relapses are rarer.

The different phases through which the hypodermic injections of mercury have passed are so recent and well-known that I need not enter into them here. Suffice it to say that Berkeley Hill appears to have been the first to inject the soluble perchloride, and Scarenzio the first to employ the insoluble subchloride; but the names of Lewin and Liebreich, who have largely practised the injection of the perchloride and the formamidate, are more particularly connected with this mode of treatment, which they have done so much to introduce to the notice of the profession. The chief drawbacks of the soluble preparations, such as the formamidate, the peptonate, the benzoate, etc., have

been found to be that they are too quickly eliminated, and that there is a difficulty in bringing the system under the influence of the metal, except by daily injections, which would be inconvenient for private practice. On the other hand, the principal objections to the insoluble preparations are, that they are apt to cause severe pain, and troublesome swellings and abscesses, as well as sudden and violent stomatitis and dysentery, which cannot be effectually combated, because absorption may still go on from the deposit which has been formed at the place of injection.

I have during the last twelve years injected a very considerable number of both soluble and insoluble preparations of mercury in the treatment of nerve-syphilis; and have taken a great deal of trouble, undeterred by numerous failures, in endeavouring to discover the best way of preparing the drug for entrance into the system, and the most advantageous method of using it with regard to dosage and continuance. The general result of my researches on this point has been that the *periodical and long-continued injection of small doses of a non-irritant insoluble preparation is the best mode of employing the metal*, and one with which one may go on without fear of disordering the system for a considerable time. If sufficiently persevered with, this mode of treatment tends more than any

other with which I am acquainted to rid the system of all traces of the syphilitic poison, to remove present symptoms which are owing to the latter, and to guard the patient against future attacks of the malady.

As the method which I am in the habit of using, differs considerably from those which are employed by others, I will now describe it in full.

1. The preparation I use, consists of one part of metallic mercury, thoroughly rubbed up with four parts of purest lanoline, and then well mixed with five parts of carbolic oil of 2 per cent. strength. This forms a grey cream which is sufficiently fluid for injection, and ten minims of which contain one grain of metallic mercury. It is absolutely indispensable in preparing the cream that the whole of the mercury should be "killed" or extinguished, so that no metallic globules are visible at the bottom of the bottle. If any such should appear, the medicine has not been properly prepared, and should be returned to the dispenser. A well-made cream has, to begin with, considerable pharmacological advantages over other preparations which are in use. In the first instance, it constitutes a perfectly homogeneous mass, by which it is distinguished from those containing calomel in suspension, from Lang's grey oil, etc. This is a more important consideration than might appear

at first sight; since it must be evident that, with a uniform mixture, the dose which it is intended to give can be much more accurately measured than with a mere suspension, which has to be shaken before it is used, and in which the active principle, being heavier than the vehicle, is apt to sink to the bottom, and is therefore unequally distributed. Indeed, in the ordinary calomel-oil, the calomel is at once precipitated on standing, and it is impossible to divide it equally. It has appeared to me on perusing reports of cases in which such an injection has produced untoward results, that the dose which caused the mischief may for the reason just given, have been much more considerable than was intended. My carbolised mercurial cream, when examined with the microscope, shows no metallic globules, but an absolutely homogeneous mass throughout, in which all the ingredients are perfectly blended.

Another pharmacological advantage of this cream is its great stability. Many preparations which have been recommended are apt to become rancid or decomposed, or too stiff for injection, in a comparatively short time, and require constant renewal and fresh making-up, which constitutes a great drawback in practice. I have kept a sample of the mercurial cream for six months, after which it was as good as on

the day when it had been prepared. It is true that, when it has been standing for some time, a few drops of the oil are apt to separate and rise to the surface, but on stirring the mass with a glass rod for a few seconds, it at once becomes quite homogeneous again; and owing to the anti-septic properties of the carbolic acid, the cream never turns rancid.

2. A very considerable advantage of the carbolised mercurial cream is, that its injection is habitually quite painless. Some patients are indeed so excessively sensitive to injections that they complain of pain after the injection of distilled water, and, in two cases out of forty-one, complaints of pain have been made to me after the injection. This, however, is quite exceptional, and occurred in hypersensitive persons who resented any other slight manipulation, for instance, eliciting the knee-jerk, equally keenly. In these two cases, however, only seven injections were made against nearly 1,250 in the other thirty-nine cases, which were completely painless. This habitual painlessness of the hypodermic injection of the cream is no doubt owing to the circumstance that carbolic acid has the property of blunting the sensibility of the terminal branches of the nerves with which it comes in contact, and thus rendering them incapable of transmitting painful impres-

sions to the nerve centres. For the same reason, a solution of carbolic acid in water has been used with success for the relief of obstinate local neuralgia. The injection of the cream produces habitually a pleasant warm feeling in the part, which lasts for a few minutes, after which the patient is no longer reminded that anything unusual has taken place. How different is this from injections of the perchloride, of calomel suspended in oil, liquid gum, water or salt-water, liquid paraffine or benzoic ether! Such injections I have known to cause severe pain for several days, and occasionally for more than a week, even when morphine or cocaine had been added to them. Shoemaker, MacCall Anderson, Tacke, and others, have recommended to inject morphine or cocaine either before, or together with, or after, the injection of the mercury; and I have given this a patient trial, but on the whole with unsatisfactory results. Indeed, the pain often begins to be particularly severe on the second or third day after the injection, when the effects of the morphine or cocaine have long passed off.

3. Many soluble, and all insoluble, injections which have been recommended are apt to cause hard swellings from the size of a cherry-stone up to that of a walnut, which appear on the second or third day; are hot, inflamed, and tender, and

cause great inconvenience in walking, standing, or even lying in bed. They sometimes disperse in a week or ten days, but in other instances an abscess is formed, which breaks towards the tenth day or so, and may go on discharging for a fortnight or even longer. It may take six weeks before such an abscess is quite healed. In the discharged matter globules of mercury may be discovered, showing that the quantity intended for absorption has not been all taken up, but that some of it has remained *in loco*, and has been lost. I have never seen such hardening or abscesses produced by the injection of the cream, which I believe to be owing to the circumstance that carbolic acid tends to prevent inflammation and suppuration in any parts submitted to its action. I will, however, not go so far as to say that such a swelling could never occur, for I have once seen it caused by a hypodermic injection of distilled water in a highly sensitive person.

For the prevention of abscesses, authors have recommended the most elaborate antiseptic precautions, such as first washing the skin with soap, alcohol, carbolic acid, and mercuric perchloride; cleaning the syringe by first filling it with absolute alcohol, or a solution of sublimate; drying the canula over a spirit-lamp, and then anointing it with carbolic oil; injecting liquid

paraffine before the mercury; using salicylic cotton-wool for wiping away the first drop of the mercurial preparation which appears at the point of the canula; covering the puncture with iodoform collodion, and letting the patient lie on his abdomen for some time after the injection, and applying electricity and massage to the puncture! All these multifarious proceedings may be dispensed with if the carbolised mercurial cream be used, scrupulous cleanliness of the syringe alone being required. The parts remain, as a rule, soft and in their ordinary condition after such an injection, as if nothing had happened.

4. The average dose of the mercurial cream which I am in the habit of using, is five minims, injected once a week into the glutæi muscles. This amounts to half a grain of mercury, but as nearly a minim is lost by some of the substance adhering to the walls of the syringe and canula the dose which really enters the circulation is somewhat less, viz., about two-fifths of a grain. I have rarely found it necessary to exceed this dose, and have given even less in anæmic and ill-nourished persons, with whom any form of mercury is so apt to disagree. I should also inject less in women, who do not bear hypodermic injections, in general, so well as men.

Where the effect appears to be tardy, I have preferred giving iodide of sodium at the same time, so as to retain the mercury longer in the system, rather than injecting larger doses of mercury, which might cause anxiety as to the possible occurrence of stomatitis or dysentery. Where the teeth and the mouth generally are in a bad state, I give chlorate of potash, both externally and internally for a time. In some cases the glycerinum acidi carbolici, diluted with water, answers still better as a mouth-wash.

The dose which I recommend is, therefore, about one-fourth of that which is habitually used; in other words, I spread over a month what is generally given in a week, or even in four or five days.

5. The hypodermic injection of the carbolised mercurial cream is highly effective in cases of truly specific lesions of the brain, spinal cord, and nerves, as shown by the steady improvement, and in favourable cases by the eventual disappearance of the symptoms of gunma and arterial disease. By "favourable cases" I mean those which have remained uncomplicated with severe ordinary secondary lesions. There were thirteen such cases out of forty-one thus treated. Specific eruptions and ulcerations, which are not unfrequently present at the same time, heal well under the influence of this treatment, sometimes after having

existed for years. The patients generally express themselves as feeling better a day or two after the injection, in the beginning of the treatment. The bowels often act with more freedom on the first two days than during the remainder of the week. I have often seen the tongue, which had been dry and furred, become moist and clean, while appetite and digestion improved, and a general tonic influence was manifested, owing, no doubt, to the neutralisation of the toxins which previously infested the system.

The elimination of mercury from the blood and the tissues takes place by the saliva, sweat, the secretions of the liver and intestines, and more especially by the urine. In the latter it can be shown by Fürbringer's and Almén's methods, between twelve and twenty-four hours after the injection.

The principal excretory organ of mercury being the kidneys, it behoves us to see that they are in good condition before commencing this treatment. Kaposi lost a case, which he treated with injections of Lang's grey oil, where there was albuminuria. In case we should discover this latter condition, before or at any time during the treatment, we should either not resort at all to the hypodermic injection of mercury, or practise it with extreme caution, and in much diminished doses. I have,

however, not met with albuminuria in any of the cases which I have submitted to this treatment.

There is still much diversity of opinion about the value of iodide of potassium in the treatment of nerve-syphilis. Some authors look upon this salt as our sheet-anchor in the management of these cases, while others reject it altogether, and credit it with harm rather than good, more especially if given in those large doses which are now generally thought advisable if it is to be given at all. No one can be more convinced of the value of this medicine in rapidly combating and arresting dangerous symptoms of nerve-syphilis than myself; but I have not found it to possess actually curative properties. Where I have in former years trusted to this drug to the exclusion of mercury, I have almost invariably had imperfect results, and endless relapses; and I can therefore assign to it only a secondary place in the treatment of these affections. It is, however, in general indispensable where there is danger in delay, and should then be given in tolerably large doses, and, if necessary, by the rectum. Some physicians are disinclined to exceed a dose of five grains, while in the United States as much as 120 grains are given as a dose, even to a child. I rarely give less than twenty or more than forty grains as a dose, and have with this generally attained the end I had in view.

Iodide of sodium is often more easily borne than the potassium salt. A portion of the effects of the drug is probably owing to its impeding the elimination of mercury from the system, where this is used at the same time, and thus promoting the action of the principal drug.

I have not seen any truly specific effects from other drugs, such as gold, sarsaparilla, stillingia and others which have from time to time been in favour. I have, however, formed a high opinion of the value of a general tonic plan of treatment, more especially in cases of long-standing, and where the powers of the system in general have been much reduced. Where the patient's general health is fairly good, the mercury alone seems to act as the best tonic, no other strengthening medicine being required. But where there is wasting, and inadequate functions in general, quinine, cod-liver oil, and malt extract should be given. The latter is very useful in combination with pepsine, pancreatine, and the hypophosphites. The diet should be nutritious and easily digestible. The patient must lead a quiet life, avoid excitement and worry, late hours and violent exercise, and more especially shun any excesses in drinking and sexual indulgence, which latter are the most dangerous of all. Excessive smoking—which is so apt to lead to the abundant eruption of mucous tubercles in the mouth and

tongue in the earlier stages of syphilis — is hurtful in nerve-syphilis, more especially where reflex excitability is unduly increased, as in cases of specific epilepsy, hemiplegia, and spastic spinal paralysis. In such cases smoking should therefore be entirely prohibited or greatly reduced.

2. *Treatment of secondary ordinary lesions.*—I regret to say that I am unable to recommend any truly specific remedies for the secondary ordinary lesions, which are apt to follow in the wake of the primary specific changes; nor is it likely that any such will ever be discovered, seeing that there is no such reproductive power in the central nerve-cells as we find, for instance, in the peripheral nerves. On the whole, however, I consider the constant current of electricity the most useful agent in the treatment of these secondary lesions; for although it cannot restore destroyed nerve-cells, it often does much good by promoting nutrition where nerve-tissue has been simply damaged, and by improving the circulation of the blood in the affected vessels. For this purpose central galvanisation with a large electrode on the epigastrium, and another smaller one applied successively to the forehead, vertex, mastoid processes, and cervical vertebræ, with a current-strength of from one to five Milli-Ampères, applied for from ten to fifteen

minutes, according to circumstances, is the most generally useful mode of employing the electricity. In cases where the seat of the lesion can be very accurately localised, for instance, where the motor region of the cortex is suffering, the corresponding points of the head should be more particularly acted upon; and the direction of the current should be changed once during the application, so that the nervous areas acted upon receive alternately the influence of the positive and negative pole. The current often proves of benefit in the distressing headache and the various neuralgic pains from which these patients are so apt to suffer; it improves sleep, and allays the undue excitability of the nervous system which so often accompanies local lesions.

In syphilitic disease of the spinal cord, Faradisation of the skin by means of a large wire-brush seems sometimes more effectual than the constant current.

A most valuable application in cases of brain-syphilis is cold to the head by means of Leiter's tubes, which often acts better than morphine, antipyrin, the bromides, and chloral. These last-named remedies, however, may also be necessary in severe and obstinate cases. Finally, we must do everything in our power to strengthen and support the patient's *morale*, and cheer him up

in his mental and bodily sufferings with prospects of eventual recovery, or at least substantial improvement, wherever this can be reasonably expected.

In bringing these remarks to a close, I venture to express the hope that the principal agent in the treatment of nerve-syphilis which I have recommended, viz., the periodical and long-continued hypodermic injection of small doses of the non-irritant carbolised mercurial cream, will be tested by you in your practice, and may be found by you to deserve the place which I have assigned to it in the treatment of these affections. If such should be the case, I shall be amply repaid for the trouble and time which I have given to the subject; and I trust that, in future, when this therapeutical proceeding shall be perseveringly used at an early period of the terrible group of diseases with which we have to battle, the prognosis of nerve-syphilis in general will become more favourable than it has been up to the present time.

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